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ABSTRACT

This study evaluated strategies to encourage interaction in a distance education setting, specifically a Ball State University (Indiana) distance graduate-level course in Elementary School Curriculum which utilized the World Wide Web and a "Class Page." Participants were primarily elementary school teachers (47 graduate students) who completed survey instruments concerning their participation on the "Class Page," interactions with both the instructor and other students, and utilization of Web resources. An initial survey regarding students' computer literacy skills and usage patterns was followed by seven additional surveys throughout the semester which focused on "Class Page" usage and interaction patterns. Among the findings were: student views regarding the value of getting to know fellow classmates shifted from 0 percent (Week 2) to 88 percent (Week 15); students judging they were able to freely express their views went from 11 percent (Week 2) to 91 percent (Week 15). Increases were also noted across the semester concerning out-of-class participation, enjoyment using the Internet, use of e-mail, and appreciation of the distance environment tools for encouraging involvement and interaction. Although many students questioned the usefulness of the "Page" at the beginning of the semester, the final survey found all viewed the "Page" as useful. (Contains 11 references.) (DB)

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"ENHANCING CLASSROOM INTERACTION IN DISTANCE EDUCATION UTILIZING THE WORLD WIDE WEB"

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JAY C. THOMPSON, JR.

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

"ENHANCING CLASSROOM INTERACTION IN DISTANCE EDUCATION UTILIZING THE WORLD WIDE WEB"

Introduction

The Internet, specifically the World Wide Web, has the potential to reinforce and enhance university teaching and learning. It is beginning to have a massive impact upon faculty and students on many college campuses. Jeffrey R. Young reported in the *Chronicle of Higher Education* that UCLA "will provide a Web page for every course in its largest unit, the College of Letters and Science", by the beginning of the upcoming Fall 1997 Semester. This promise "amounts to a revolution in the way the university views the Internet" (*Chronicle of Higher Education*, August 1, 1997).

Much of the hype behind this clamor has been based upon reported early successes of Web class pages. As a result, some colleges and administrators have concluded such pages should become universal because the utilization benefits of this powerful communication strategy has been so obvious. The easy access to information and learning activities provided through the Web create a newly defined learning environment. The dynamic and pervasive nature of Web technologies make the prospect of gaining access to information, communication, and learning through this format an educational transformation that is just beginning to emerge.

The example from UCLA is common at many universities; however, these developments raise questions such as: What data have been collected regarding both learning effectiveness and student experiences utilizing Web based technologies? What strategies are planned to assist technophobic faculty in developing the requisite skills to develop learner focused Web pages? What type of technical support is needed to develop dynamic interactive uses of the Web? Does the Internet provide the educational promise that seems so real? Will this technology stimulate faculty and students to teach and learn in different ways? Can learning communities be developed and sustained utilizing this technology?

Purpose and Methodology

Educational theorists have long claimed that effective learning is enhanced by the active involvement of the learner (see: Rotter, 1954; Rogers, 1969; Astin, 1984; Holmberg,1989; and Johnson & Johnson, 1994). If learning requires interaction among learners, then educators need to develop and assess strategies which encourage interaction in the educational setting. It is critical to plan for interactivity in a distance education setting in which one way video with two way audio is utilized as the delivery system, as was the case in this study environment. The specific focus of this study was a distance education classroom which utilized the World Wide Web and a "Class Page" designed and developed for a specific graduate level course in Elementary School Curriculum.

The purpose of the study was to collect data regarding the impact of utilizing an asynchronous "Class Page" to enhance: (1) interaction between the instructor and students, (2) interaction between students and peers at different sites, and (3) student utilization of Web resources provided through the "Class Page".

The participants were primarily elementary school teachers (47 graduate students) enrolled in a television course entitled "Elementary School Curriculum" (EdCur 610) during the Spring Semester, 1997. Data were collected through the use of survey instruments developed to determine participants' perceptions and actions regarding the "Class Page" and their interactions with both the instructor and other students enrolled in the class. An electronic Web compatible survey software, "**inQsit**", developed by the University Computing Services at Ball State University, was utilized to collect data through the "Class Page" itself. This resource provided a wide array of survey and questionnaire options: Instruments using Likert type scales, semantic differential formats, single word responses, short answer responses, and essay responses were used to collect the data.

A series of time dated surveys (eight totally) were administered during the semester. Data collected from these surveys were compiled and reported in raw numbers and percentages rounded to the nearest whole number. The resulting frequency and interaction patterns were used to interpret the responses and activities attributed to the "Class Page".

Why Create a "Class Page"?

The "Class Page" was designed and developed to increase student interaction in a typical distance learning environment. The development process was a team effort which involved multiple campus units: the University Computing Services, the Teleplex, the University Library, and the Department of Educational Leadership. The individuals from these units who worked on this team possessed varied and unique skills that were essential to the creation and utilization of an interactive "Class Page".

As consumers of television most adults have learned to be passive in response to this medium, i.e. we view and do not expect to be engaged in dialogue with either the presenter or the topic. To combat this existing learned behavior, the "Page" was designed to promote active student involvement in the learning process both prior to coming to the class and during the live broadcast itself.

Students taking classes at off-campus sites do not have the resource advantages of those on campus. To minimize this problem, a multitude of instructional resources were provided on the "Class Page". For example, the University Library was on the Web and electronically linked to every college and university library in the state. Adding this link made access feasible for each distance site student to any higher education library in the state. Several other library links such as the Library of Congress, a virtual reference library, and several Internet libraries were established to promote accessibility and minimize travel time for securing resources. Numerous Web links were added

to promote additional resource opportunities for students, e.g. sites of on-line journals and magazines, specific content areas, state and federal government education agencies, museums, professional organizations, children's resources, teacher resources, and multiple search engines were linked for students to explore and to utilize in preparing for class.

A specific goal of the "Class Page" was to establish a forum for students to exchange ideas, experiences, and successes. This was accomplished through the creation of user friendly pages which enabled the students to post ideas directly on the Web by providing information on a brief form, typing messages, and clicking the "post" button. Three pages utilized this process: (1) "Motivation Ideas" a page where students posted ideas found to be valuable learning activities for elementary students, i.e. classroom successes; (2) "Projects" a page where students posted their work on a project where peers could develop knowledge, provide assistance, and share experiences as the individual or group worked on the activity; and (3) "Discussion Area" a modified newsgroup format where students could discuss class topics and respond to the views of their classmates prior to the class meeting when the topic was discussed. Students could post questions or follow-up discussion items following the class. Each of these public areas was put on the Web for consumption by the instructor, graduate assistants, and class members.

A private forum was needed for student exchanges with the instructor, graduate assistants, and class peers as well as with working class groups. A post office was established with e-mail addresses which linked class members

to each other privately. To personalize the post office, a small individual photo icon was added to individual e-mail links. This aspect of the "Class Page" was not monitored by the instructor; however, feedback from many students indicated that this was a valuable aspect of the communication process and one that was used extensively in dialogue with peers, instructor and graduate assistants. The instructor typically received e-mail from two-thirds of the class members weekly. During the semester all distant site students communicated with the instructor through this process.

The instructor prepared a "Class Questions" page as a way of stimulating student thought about specific topics prior to class. This also encouraged and assisted the students in their class preparation. Students were encouraged to dialogue with other students in the "Discussion Area" before the class regarding their experiences and thoughts on the topic. The instructor also provided a "Class Handouts" page. This page included links to Web sites and resources that pertained to the topic and handouts which were scanned and put on the Web site for student use. These were designed to assist the student in locating resources on the topic. They could also be used for the weekly written critiques regarding the topic or area being discussed. Both the "questions " and the "handouts" were designed to enhance class preparation and to make time spent in class more interesting and valuable.

One of the planned purposes of this teaching / learning experience was to model instructional technology and its uses for teachers and schools. This concept was eloquently expressed several years ago by Dr. Albert Schweitzer

when he stated: "Modeling isn't the best way to teach. It is the only way to teach." Classroom teachers and elementary schools need to be exposed to alternative teaching and learning styles. It is essential these be modeled in the university distance learning environment. The old adage "we teach as we were taught" may be all too accurate; however, we need not perpetuate the "talking head" syndrome in distance education. To establish a learning community in the distance education environment it is essential to think about the models utilized in presenting the course content.

The "Class Page" was created to accomplish the following goals:

- to increase classroom interaction
- to provide instructional resources
- to establish a communication forum
- to supplement class preparation
- to create a user friendly site, and
- to model instructional technology

The overarching goal in the developmental process was simple. The instructor wanted what every teacher wants -- student involvement and engagement in learning! The challenge was to create a dynamic, interactive learning community in a distance education environment.

Data Relative to the Utilization of the "Class Page"

At the beginning of the semester students were surveyed regarding their computer literacy skills and usage patterns. These data were critical to the success of the project since computer skills were essential to the effective use of

Web based technologies. Initially 70% of the population reported they had a personal computer in their home; 92% had a computer available at work. Both were used primarily in word processing tasks. However, only 57% of the available computers had Internet access. The prime Internet provider was America On-line (19% of the total population); these data were of value later because during the semester the only provider that consistently had problems in actively enabling students to use the sites and post ideas to the class Web site were students using the AOL service. This could be explained in part due to the heavy traffic found on this provider's service, but the system interfaces and early software did not support the interactivity available through the "Class Page". Only 54% of the students had previously used electronic mail. Eight percent (8%) of the students enrolled in the class used the Internet on a regular basis; yet, only one in three students had used the Internet more than once prior to this class. Fifty-seven per cent (57%) had never performed any function on the Internet. The overwhelming majority of those enrolled did not have familiarity with newsgroups, chat rooms, or search engines. Only 5% of the population described themselves as being "very skilled" in using this resource. When asked if computer training would be helpful, 72% responded in the affirmative; and 86% requested help in using the Internet. When asked "which computer-related area(s) do you anticipate will be a challenge": 27% indicated finding an available Internet-linked computer; 14% thought personal lack of computer skills would be a problem; 22% expressed discomfort with computer

use; 43% expressed concern about getting help with computer related problems; and 30% did not anticipate the above areas would be a challenge.

The above data, combined with additional data not reported here, confirmed an erroneous assumption; we had over-assumed both skill levels and experiences in our population. This challenge was perceived as an opportunity to provide valuable experiences and skills to a group of professional educators and thereby enhance their classroom effectiveness.

The survey administered following the first two weeks of class confirmed our optimism regarding the student perspective of viewing this as an opportunity. Using a five point scale from "strongly disagree" to " strongly agree", 85% of the students agreed or strongly agreed they would learn new computer skills using the "Class Page". Almost four of every five students (79%) indicated they enjoyed exploring the resources available on the "Class Page". Seventy-one per cent (71%) strongly agreed exploring the Internet was an enjoyable new experience.

Frustration was also expressed with the new expectation associated with using this resource. Students did not see the "Class Page" as a way to get to know fellow classmates (no one "agreed" or "strongly agreed" with this statement), and few saw the "Page" as a vehicle to discuss class content (29% "agreed" or "strongly agreed"). Only 11% "agreed" it was a vehicle to express their views. This early feedback indicated we desperately needed to teach the students to utilize the "Page" as a learning and communicating resource. In spite of these frustrations 83% of the students provided specific examples of

content or ideas that were helpful to them in the initial classes. In other words, class meeting time was conforming to or exceeding their expectations. This was not a surprise as this was familiar territory for the students based upon their previous class experiences.

Initial attempts by students to utilize the Web technologies pointed out specific problem areas. An early determination was made to avoid as many frustration areas with the "Page" as possible for the students. The first attempt to use e-mail was only marginally successful as most students at the distance sites did not know the personal password for their VAX account through the University computing system to access e-mail. In fact, most of these students had not previously used the campus computing system. The "Discussion Area" was originally an external newsreader program and students without previous experience using such technologies struggled. Rather than spend time trying to make what had been proposed work, new solutions were created; early technical failures were rapidly discontinued. The University Computing Services personnel contributed many hours of work to make needed changes and to create user friendly applications. Ultimately Web based e-mail was developed to correct the first problem, the second problem was changed by developing a Web based newsreader. These early frustrations were intimidating for some students and probably slowed their willingness to engage in interaction through the "Page".

As the semester progressed, more students engaged in utilizing the "Class Page" as a learning resource. At six weeks, 58% of the students

indicated they were secure in their use of the "Page"; 62% acknowledged it encouraged out-of-class participation; and two of three students reported they enjoyed exploring the Internet through the "Page". Half of the students reported they found additional class resources through the web sites posted on the "Page", and 77% reported they were using e-mail to correspond with fellow students.

By the 10th and 11th week the feedback on the utilization of the "Page" was becoming increasingly positive. Three of every five students reported the distance learning setting encouraged class involvement. Over three of four students (76%) indicated the "Discussion Area" on the "Page" was encouraging the examination of important topics; 83% of the respondents stated they were gaining important computer competencies; 86% reported the "Page" was user friendly. Regarding the earlier reported fear of personal technical problems, 91% reported they thought the University support provided was very good or excellent. Other aspects of the "Page" were designed to encourage interactivity, and respondents reported course "handouts" as very good or excellent (72%); "class questions" were stimulating for thought and discussion (78%); the notice board was keeping them informed (84%); the linked Web sites were providing valuable educational resources (81%); and the usefulness of the "Page" was judged as valuable (80%). More than four of every five students (83%) gave examples of actions they had taken to make the "Page" valuable to them in out-of-class activities.

A survey administered during the 13th week of the semester found that 66% of the students were regularly using the "Page" to interact with classmates. Only 6% reported they "strongly agreed" with the statement "I am frustrated when using the 'Class Page'." When asked about concerns, two students expressed continuing frustrations with established class expectations, and five described concerns that would be analyzed as positive; e.g., "I have enjoyed this class. Sorry for the delay in the submission of. . . ." , and "I am always concerned with keeping up with class assignments, but so far it hasn't been a big problem." Seventy-two per cent (72%) of the respondents provided specific examples of concepts or ideas they found helpful from using the "Page" and attending class during the previous week.

The final class survey, a required Faculty / Course Assessment Form, was administered during the 15th week of the semester. Several questions were repeated on this Form to determine if changes had occurred in student perceptions regarding the "Class Page" and the way it was used. The respondents (62%) reported that interactions on the "Page" stimulated critical thinking. Eighty-five per cent (85%) deemed the resources on the "Class Page" to be relevant to course objectives and their learning; and 77% judged the "Page" helped achieve course purposes. When judging the expectations of students using the "Page" 82% reported this was appropriate to their current level of development. Over nine of every ten students (91%) indicated they felt free to express "ideas, judgments, and questions".

The fundamental purpose behind the development of this technology was to increase interaction. Eighty-eight per cent (88%) of the students reported interactions with other students as very helpful in mastering course concepts and competencies. One hundred per cent (100%) indicated peer interaction was very helpful. However, when asked what role the "Page" played in the process of increasing interaction only 50% judged it to be very helpful. One third of the respondents were undecided or had no opinion on this. One can only speculate how individuals at varied sites would interact with individuals at other sites without the technologies provided through the "Page". One additional item asked if "Page" participation encouraged the student to apply concepts and competencies beyond the context of the distance education classroom; 86% reported this indeed was the case. Analysis of written responses to open ended questions found that only one respondent failed to give examples regarding the value of using the "Page" during the semester.

Summary

In the distance education environment it is critical for the instructor to focus upon pre-planned interaction strategy components to enhance involvement and learning. The absence of such planned learner engagement will potentially result in the one way delivery of instructor lecture information with little student interaction with either the instructor or other students. One of the persistent criticisms of distance education has been that the instructional approach used too often has involved what has been called the "talking head" syndrome approach, i.e. information is provided with very little exchange

between students and instructor. An alternative to address this concern must consider ways to increase learner efficacy through greater student involvement (Bates, 1995; Sayers, 1996).

This study involved the use of current Web technologies combined with the creation of a user friendly set of tools to enable the distance education classroom to become more interactive. The course was designed and delivered with the goal of enhancing interaction through the utilization of a "Class Page" accessed on the World Wide Web. This "Page" was developed to promote numerous opportunities for students to become actively involved in both course content and interaction with the instructor and class peers.

Data were collected during the course of the semester to develop understandings regarding the potential impact and use of the developed "Page" upon both involvement and interaction on the part of the students. The evidence collected regarding student behavioral changes relative to interaction during the semester was dramatic. The impact of the "Page" upon both interaction and learning was substantiated. Multiple items can be used for illustrative purposes. When students were asked about their views regarding the value of getting to know fellow classmates, perceptions shifted from 0% (Week 2 survey) to 88% (Week 15 survey). An increasing number of students judged they were freely able to express their views (11% Week 2, to 91% Week 15). Increases were also noted across the semester in questions about out of class participation, enjoyment using the Internet, use of e-mail, and perceptions

regarding the distance environment tools encouraging involvement and interaction.

At the beginning of the term many of the students had questions or concerns about the potential usefulness of the "Page"; the final survey found that all (100%) viewed the "Page" as useful. The electronic monitoring of the "Page" use found continued increase in use through the fifth week of class, and maintained consistent use on the part of students from the sixth week of the term through the end of the semester. Following completion of the class, over half of the enrolled students requested they be permitted to continue using the resources on the "Page"; this indeed was gratifying remembering the concerns, fears, and minimal Internet skills which existed at the beginning of the semester. The only aspect of the "Page" which was not made available following the end of semester was the e-mail post office as this area needed to be reestablished for subsequent students entering the class the following semester.

The "Class Page" was developed and used to create a valuable connecting bridge which linked instruction with technology. The utilization of this resource greatly enhanced interaction and contributed to the successful learning results which emerged from this distance education classroom. The successes which resulted were based upon the team support provided through the collaboration of dedicated University Computing Services personnel, supportive University Teleplex personnel, and exceptional graduate assistants. As a result, students enrolled in the distance education class, those collaborating to make the technology and instruction effective, and the

University community benefited. The initial goal to enhance distance education classroom interaction utilizing the Web was realized. This learning experience produced a positive impact not only in the distance education classroom, but also in the broader context of an emerging University focus upon technological tools and opportunities to assist instructional delivery.

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